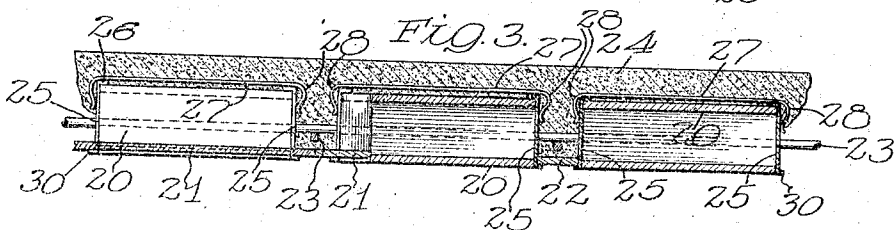
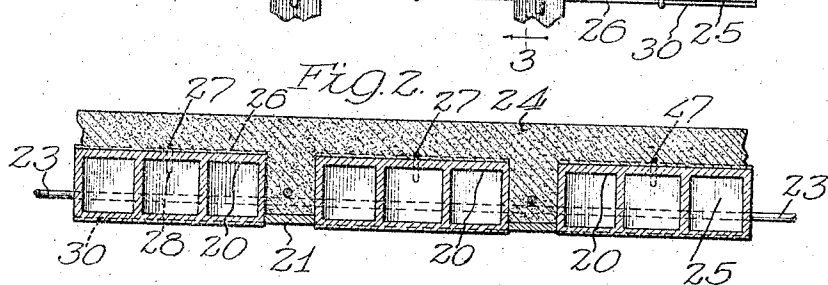
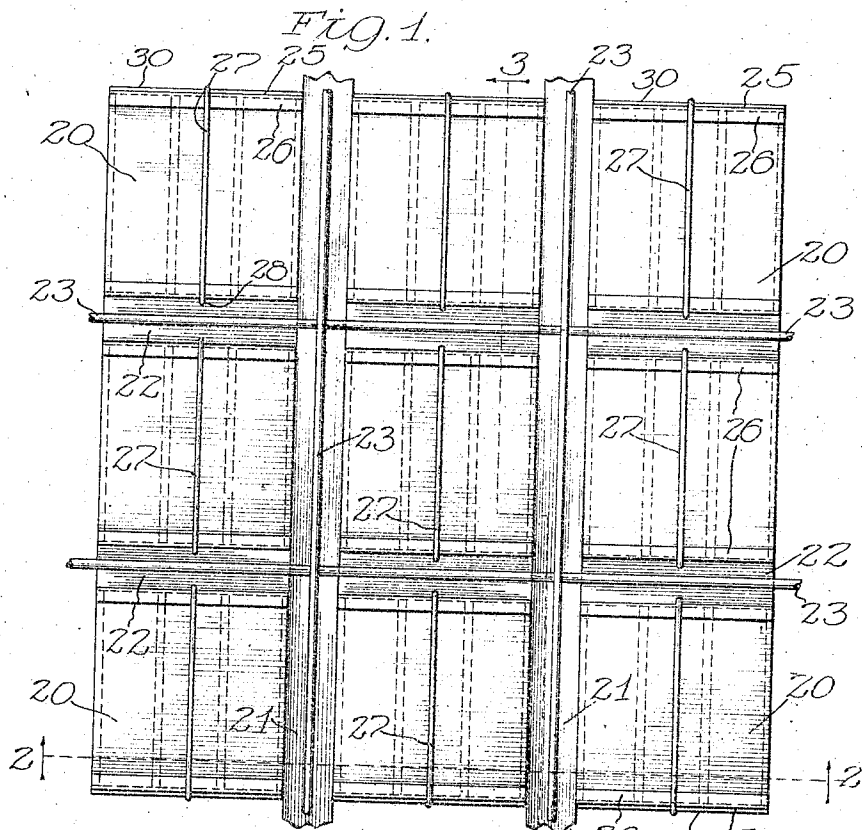


J. S. NOLAN.
 TILE STRUCTURE FOR REINFORCED CONCRETE FLOORS.
 APPLICATION FILED AUG. 7, 1911.

1,021,552.

Patented Mar. 26, 1912.

3 SHEETS-SHEET 1.



Witnesses:
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 Harry

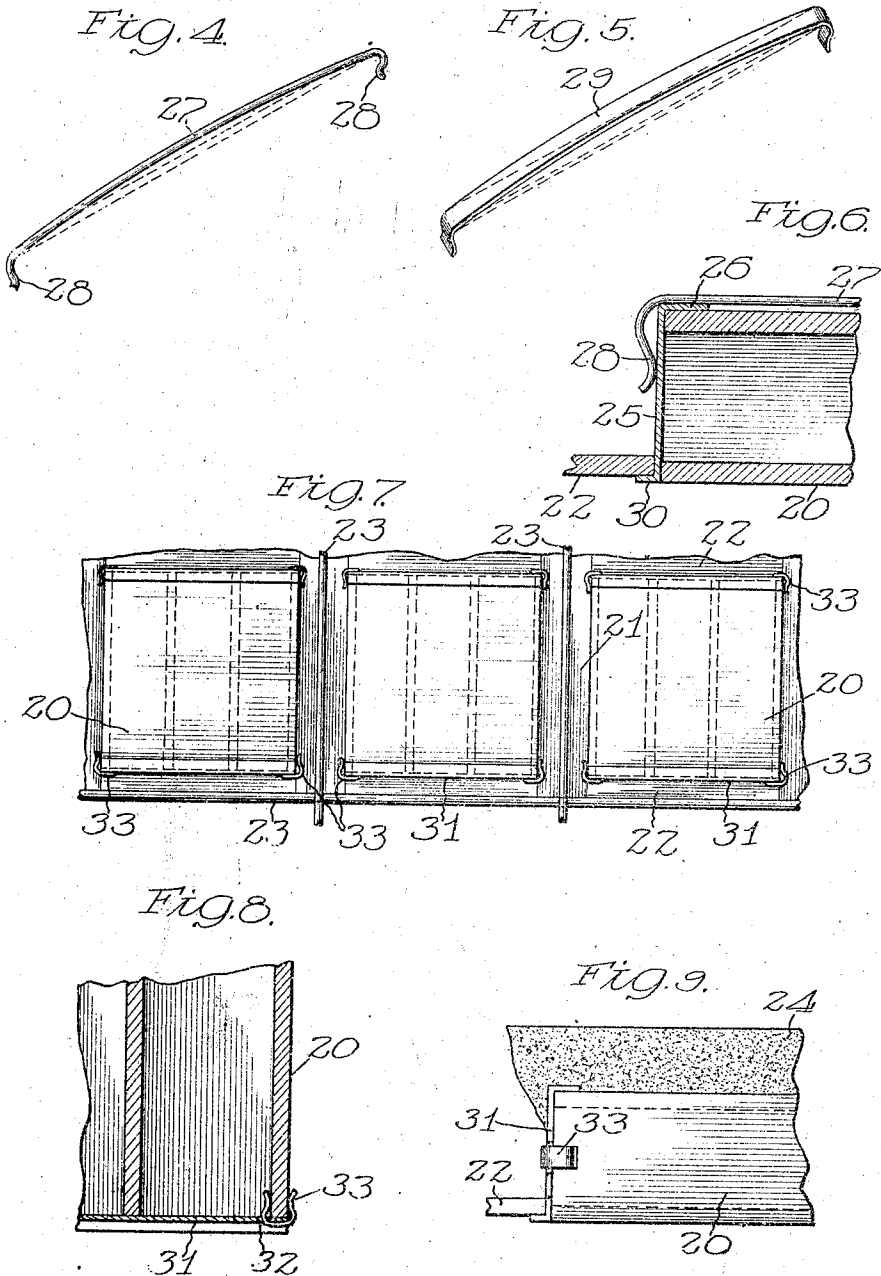
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3 SHEETS—SHEET 2.



Witnesses:
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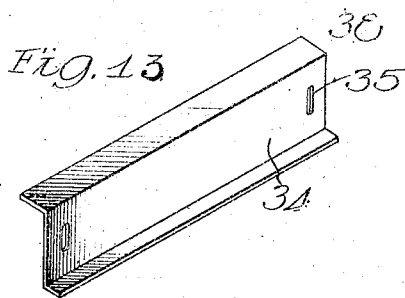
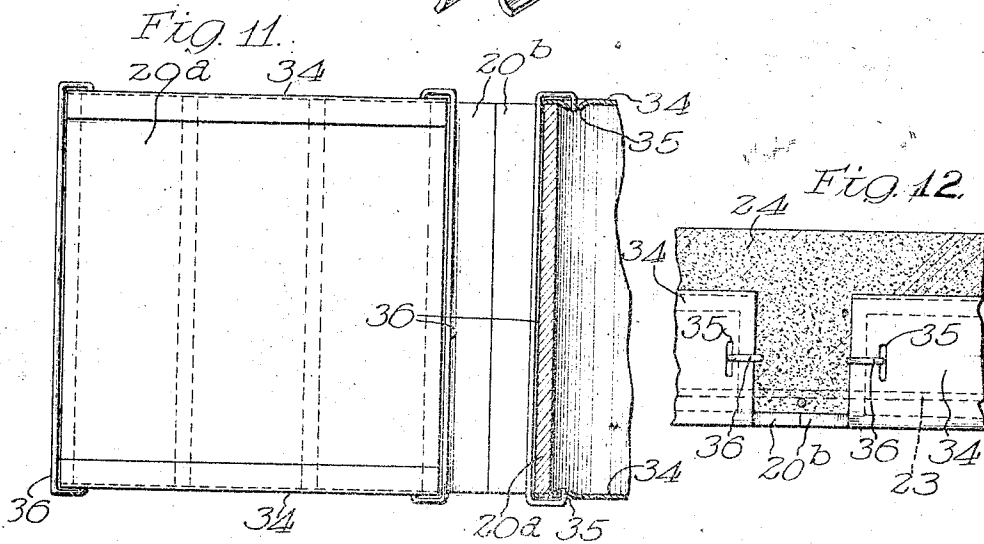
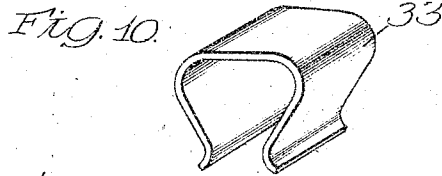
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3 SHEETS-SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

JULIAN S. NOLAN, OF HIGHLAND PARK, ILLINOIS.

TILE STRUCTURE FOR REINFORCED-CONCRETE FLOORS.

1,021,552.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed August 7, 1911. Serial No. 642,596.

To all whom it may concern:

Be it known that I, JULIAN S. NOLAN, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Tile Structures for Reinforced-Concrete Floors, of which the following is a specification.

My invention relates to reinforced concrete floors of the type in which the tiles are embedded in the tension zone of the floor for the purpose of lightening the structure and providing on the under side of it an all tile plastering surface or ceiling; and the invention has for its object to provide a tile structure, suitable particularly for a floor of this character in which the reinforcements run both ways through the concrete, in which the tile units are made in part of earthenware elements and in part of sheet metal devices; the use of the sheet metal being of advantage for the reason that it lightens the tile structure, decreases breakage, and for other reasons which will be made clear in the following description.

The invention has for a further object to provide a completely closed hollow tile unit for use in concrete and tile structures consisting of an open-ended, earthenware, tile element and sheet metal closure plates for the open ends of the tile element, together with suitable means for firmly binding the closure plates against the outer ends of the tile element.

The invention is illustrated in certain typical embodiments in the accompanying drawings, wherein—

Figure 1 is a plan view of a tile construction for a two-way reinforced floor, Fig. 2, a sectional view taken on line 2—2 of Fig. 1, looking in the direction of the arrows, but showing the concrete as well as the tiles; Fig. 3, a view similar to Fig. 2 taken on line 3—3 of Fig. 1, looking in the direction of the arrows; Fig. 4, a view in perspective of a preferred form of clip for binding the closure plates to the hollow tile element; Fig. 5 a similar view of another form of clip. Fig. 6 a fragmentary sectional view illustrating the application of the closure block and clip to the tile, Fig. 7 a plan view of a tile structure illustrating a modified form of clip. Figs. 8 and 9 a fragmentary sectional plan and a fragmentary vertical sectional view further illustrating

this modification. Fig. 10 a view in perspective of the clip shown in the three preceding figures. Fig. 11 a plan view of a tile unit employing a modified form of closure block and clip for holding the same in place showing in sectional plan a portion of an adjoining unit. Fig. 12 is a fragmentary vertical sectional view through a floor employing the unit shown in Fig. 11, and Fig. 13 is a view, in perspective, of the closure element employed in this construction.

Like characters of reference indicate like parts in the several figures of the drawings.

Referring first to Figs. 1 to 6 inclusive, 20 designates a number of hollow, open-ended, earthenware tiles of ordinary form. These hollow tiles are spaced apart by the flat tile elements 21 and 22, so that two sets of intersecting channels are provided which receive the reinforcing rods 23 and are filled with the concrete 24 which makes up the body of the floor. The open ends of the hollow tiles are closed by sheet metal closure plates 25 preferably formed at their upper edges with flanges 26 of the same width as the plates which overlap the tiles. The closure plates 25 are held firmly bound against the tiles so as to prevent concrete from entering the same by means preferably of the wire clips 27 which extend over the top of the tiles and are formed at each end with bends 28 which bear against the plates 25. The overlap of the flanges 26 on the top of the tiles prevents any concrete from working into the hollows of the tiles between the top of the tiles and the closure plates. The flanges are particularly important because building tiles are scarcely ever perfectly regular in form. They are frequently warped and often broken and irregular along the edges. The clips are somewhat bowed and straightened out and put under tension when applied to the tiles.

In Fig. 5 I have shown a clip 29 of similar character to that shown in the preceding figures, except that it is made of a strip of spring metal, instead of being made of wire.

Preferably the closure plates 25 are formed at their lower edges with the outwardly projecting flanges 30 which serve to sustain the flat spacing elements 21 and 22. Under certain circumstances the adhesion between the concrete and the last-mentioned tile elements will be sufficient to make flanges 30 unnecessary.

Figs. 7 to 10 inclusive illustrate a modi-

fied construction. The closure plates 31 in this case are formed with slits 32 and clamped to the hollow tiles by means of the U-shaped clips 33 (Figs. 8 and 10).

- 5 In the construction shown in Figs. 11 to 13 inclusive the closure strips 34 are formed with similar slits 35 and are secured to the hollow tiles by means of the clips 36. The hollow tiles might in any of these constructions be flanged tiles so as to do away with one set of the flat tile elements. In Figs. 11 and 12 the hollow tiles 20^a are formed on their closed sides with flanges 20^b.

- 10 While I have described my invention as embodied in certain typical constructions, it will be realized that there might be certain modifications made in the forms, constructions and arrangements shown and described without departure from the invention; therefore, I do not limit myself to these particulars except so far as they are made specific limitations in certain of the claims herein.

I claim:

- 25 1. A tile structure for concrete floors comprising in combination a plurality of hollow, open-ended tiles, flat tile elements which space said hollow tiles apart so as to form channels to receive reinforcing rods

and concrete and provide, with said hollow tiles, an all tile ceiling on the under surface of the floor, metal closure elements which extend across the open ends of the hollow tiles provided with means for sustaining said flat tile elements, and clips which bind said closure elements to said hollow tiles.

2. A tile unit for concrete and tile constructions comprising a hollow open ended tile, sheet metal closure plates covering the open ends of the tile and formed with flanges overlapping the top of the tile of substantially the same width as the plates, and means for binding the closure plates to the tile.

3. A tile unit for concrete and tile constructions comprising a hollow open ended tile, sheet metal closure plates covering the open ends of the tile and formed with flanges overlapping the top of the tile of substantially the same width as the plates and flanges projecting in the opposite direction at the lower edges of said closure plates, and means for binding the closure plates to the tile.

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Witnesses:

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